

Title: Automated Hair Isolation and Processing System

any contiguous area of said surface to which said surface-attached hair-like fibers are attached not only those areas to which the hair fibers are directly attached;

- ☐ a track guide means for guiding said repeating dispensing means by substantially continuous contact between said track guide means and said repeating dispensing means so as to provide alignment with one of the segregated rows of surface-attached hair-like fibers to allow the hair segments from substantially only this single segregated row to be guided into said repeating dispensing means as it moves along a substantially defined path that substantially coincides with said single segregated row and this alignment during repeating dispensing means movement is possible individually for both adjacent rows of segregated surface-attached hair segments.

55. (amended) The apparatus of claim 54 further comprising:

- ☐ a position ascertaining means for ascertaining longitudinal position of said repeating dispensing means along said track guide means;
- ☐ a row determinant means for ascertaining within which of the segregated rows said repeating dispensing means is positioned;
- ☐ a longitudinal conveyance means for conveying a longitudinal segment of a group of at least one surface-attached hairs longitudinally through said repeating dispensing means;
- ☐ a hair length measurement means for ascertaining the longitudinal length of said longitudinal segment of the group of surface-attached hairs that has been conveyed through said repeating dispensing means by said longitudinal conveyance means;
- ☐ a cutting means for cutting hair in said hair isolation area means;
- ☐ a cutting control means for using data coming from said position ascertaining means and said row determinant means and said hair length measurement means and corresponding to a longitudinal position along a specific row to reference recorded hair length data corresponding to said position so as to trigger said cutting means to cut the group of longitudinally conveyed hairs at a moment when the group's linear length measured from said cutting means to the surface of hair attachment approximately equals the recorded hair length.

Title: Automated Hair Isolation and Processing System

61. (amended) The apparatus of claim 35 further comprising:

- ☐ a hair-flow reversing means for causing surface-attached hairs that have entered said hair isolation area means to exit it substantially from the direction that they entered;
- ☐ an exiting hair separation means for intermittently separating the hairs that reversed direction and exited said hair isolation area means from the hairs in said cued hair supply means and said exiting hair separation means is positioned between said hair isolation area means and said cued hair supply means;
- ☐ a reversed hair exit pathway means for allowing the hairs that have been reversed out of said hair isolation area means by said hair-flow reversing means to exit said apparatus and its origin is positioned between said exiting hair separation means and said hair isolation area means and its terminus is positioned lateral to the path of hair flow into said repeating dispensing means so as to direct the exiting hairs away from reentering said repeating dispensing means.

64. (amended) An apparatus for the processing of hairs which are attached to a surface configured so that processing of any hair only occurs a substantially controlled number of times, comprising:

- ☐ a hair processing means for processing surface-attached hair-like fibers so as to change their appearance as a group;
- ☐ a hair surface row segregation means for segregating said surface-attached hair-like fibers substantially originating from two adjacent surface areas so that the segments of the hair shafts that will be processed are segregated in a specific row prior to and during processing by said hair processing means and said hair surface row segregation means rests on the surface to which said surface-attached hair-like fibers are attached and is substantially stationary relative to said surface during processing, whereby the phrase substantially stationary refers to the net movement of said hair surface row segregation means as a whole but a given area of it may flex or move as said hair processing means moves by it and said hair surface row segregation means can rest on any contiguous area of the surface to which said surface-attached hair-like fibers are attached not only those areas to which the hair fibers are directly attached;

Title: Automated Hair Isolation and Processing System

- C3
- a track guide means for guiding said hair processing means by substantially continuous contact between said track guide means and said hair processing means so as to provide alignment with one of the segregated rows of surface-attached hair-like fibers to allow the hair segments from substantially only this single segregated row to be guided into said hair processing means as it moves along a substantially defined path that substantially coincides with said single segregated and this alignment during hair processing means movement is possible individually for both adjacent rows of segregated surface-attached hair segments.
- 236
- 0

Claim Amendments in Marked-Up Form

54. (amended) The apparatus of claim 35 further comprising:

- ☐ a hair surface row segregation means for segregating said surface-attached hair-like fibers substantially originating from two adjacent surface areas so that the segments of the hair shafts that will be processed are segregated in a specific row prior to and during hair dispensing by said repeating dispensing means and said hair surface row segregation means rests on the surface to which said surfaced-attached hair-like fibers are attached and is substantially stationary relative to said surface during processing, whereby the phrase substantially stationary refers to the net movement of said hair surface row segregation means as a whole but a given area of it may flex or move as said [apparatus] repeating dispensing means moves by it and said hair surface row segregation means can rest on any contiguous area of said surface to which said surface-attached hair-like fibers are attached not only those areas to which the hair fibers are directly attached;
- ☐ a track guide means for guiding said [apparatus] repeating dispensing means by substantially continuous contact between said track guide means and said [apparatus] repeating dispensing means so as to provide alignment with one of the segregated rows of surface-attached hair-like fibers to allow the hair segments from substantially only this single segregated row to be guided into said [apparatus] repeating dispensing means as it moves along a substantially defined path that substantially coincides with said single segregated row and this alignment during [apparatus] repeating dispensing means movement is possible individually for both adjacent rows of segregated surface-attached hair segments.

55. (amended) The apparatus of claim 54 further comprising:

- ☐ a position ascertaining means for ascertaining longitudinal position of said [apparatus] repeating dispensing means along said track guide means;
- ☐ a row determinant means for ascertaining within which of the segregated rows said [apparatus] repeating dispensing means is positioned;

Title: Automated Hair Isolation and Processing System

- ☐ a longitudinal conveyance means for conveying a longitudinal segment of a group of at least one surface-attached hairs longitudinally through said [apparatus] repeating dispensing means;
- ☐ a hair length measurement means for ascertaining the longitudinal length of said longitudinal segment of the group of surface-attached hairs that has been conveyed through said [apparatus] repeating dispensing means by said longitudinal conveyance means;
- ☐ a cutting means for cutting hair in said hair isolation area means;
- ☐ a cutting control means for using data coming from said position ascertaining means and said row determinant means and said hair length measurement means and corresponding to a longitudinal position along a specific row to reference recorded hair length data corresponding to said position so as to trigger said cutting means to cut the group of longitudinally conveyed hairs at a moment when the group's linear length measured from said cutting means to the surface of hair attachment approximately equals the recorded hair length.

61. (amended) The apparatus of claim 35 further comprising:

- ☐ a hair-flow reversing means for causing surface-attached hairs that have entered said hair isolation area means to exit it substantially from the direction that they entered;
- ☐ an exiting hair separation means for intermittently separating the hairs that reversed direction and exited said hair isolation area means from the hairs [is] in said cued hair supply means and said exiting hair separation means is positioned between said hair isolation area means and said cued hair supply means;
- ☐ a reversed hair exit pathway means for allowing the hairs that have been reversed out of said hair isolation area means by said hair-flow reversing means to exit said apparatus and its origin is positioned between said exiting hair separation means and said hair isolation area means and its terminus is positioned lateral to the path of hair flow into said repeating dispensing means so [at] as to direct the exiting hairs away from reentering said repeating dispensing means.

Title: Automated Hair Isolation and Processing System

64. (amended) An apparatus for the processing of hairs which are attached to a surface configured so that processing of any hair only occurs a substantially controlled number of times, comprising:

- ☐ a hair processing means for processing surface-attached hair -like fibers so as to change their appearance as a group;
- ☐ a hair surface row segregation means for segregating said surface-attached hair-like fibers substantially originating from two adjacent surface areas so that the segments of the hair shafts that will be processed are segregated in a specific row prior to and during processing by said hair processing means and said hair surface row segregation means rests on the surface to which said surface-attached hair-like fibers are attached and is substantially stationary relative to said surface during processing, whereby the phrase substantially stationary refers to the net movement of said hair surface row segregation means as a whole but a given area of it may flex or move as said [apparatus] hair processing means moves by it and said hair surface row segregation means can rest on any contiguous area of the surface to which said surface-attached hair-like fibers are attached not only those areas to which the hair fibers are directly attached;
- ☐ a track guide means for guiding said [apparatus] hair processing means by substantially continuous contact between said track guide means and said [apparatus] hair processing means so as to provide alignment with one of the segregated rows of surface-attached hair-like fibers to allow the hair segments from substantially only this single segregated row to be guided into said [apparatus] hair processing means as it moves along a substantially defined path that substantially coincides with said single segregated and this alignment during [apparatus] hair processing means movement is possible individually for both adjacent rows of segregated surface-attached hair segments.

Title: Automated Hair Isolation and Processing System

Claim Rejections - 35 USC § 101

OA: Claims 19,20,25,26,31 and 32 are rejected under 35 U.S.C. § 101 because they appear to embrace more than one statutory class of invention. Claims which are intended to embrace both product or machine and process is precluded by language of 35 USC § 101, which sets forth statutory classes of the invention in the alternative only. Claims which embrace multiple statutory classes of invention is prohibited (See *Ex parte Lyell*, 17 USPQ2d 1548 (1990)).

RESPONSE: These claims have been canceled. The new claims do not purport to be both a machine and process.

Claim rejections - 35 USC § 112

O.A.: Claims 19,20,25,26,31, and 32 are invalid under 35 USC § 112, second paragraph, since a claim which purports to be both machine and process is ambiguous and therefore does not particularly point out and distinctly claim the subject matter of the invention. *Ex parte Lyell*, 17 USPQ2d 1548 (1990). Therefore, these claims will not be further treated on the merits thereof.

RESPONSE: These claims have been canceled. The new claims do not purport to be both a machine and process.

O.A.: Claims 18-34 are rejected as failing to define the invention in the manner required by 35 U.S.C. § 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

Regarding claim 18, not only is it replete with functional and operational language, but also the word "means" is preceded by the word(s) "entrance-gate", "pushback-gate" and "metering-area" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. § 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

RESPONSE: This above objection concerning claims 18-34 is remedied because claims 13-34 have been canceled and new rewritten claims explicitly state the function which a means clause performs.

Title: Automated Hair Isolation and Processing System

O.A.: Regarding claim 21, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP 2173.05(d).

RESPONSE: Claim 21 has been canceled. The phrase "such as" has not been used in the new claims.

O.A.: Regarding claim 22, in line 1, "said entrance gate movement" lacks a prior antecedent.

RESPONSE: Claim 22 has been canceled. This semantic objection is not relevant to the new claims.

O.A.: Regarding claim 23, functional recitation that "said logical control means controls entrance gate movement contingently based on hair-presence sensor inputs into said logical control means" is indefinite because it is not supported by recitation in the claim of sufficient structure to accomplish the function.

RESPONSE: Claim 23 has been canceled. Furthermore, new claims that define sensor control are more specific about their functional mechanisms. For example, new claims 41 and 42 specifically define the sensor-control mechanisms by stating the type of input that they measure and the function that they control. The inner-workings of a given sensor are not explained where a prior art device is known to perform this function. For example, claim 42 describes a sensor that measures speed of advancement over a surface, and prior art devices for measuring speed of advancement over a surface are well known.

O.A.: Regarding claim 24, not only is it replete with functional and operational language, but also the word "means" is preceded by the word(s) "hair processing system" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. § 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Also in line 15, "the linear rate" lacks a prior antecedent.

RESPONSE: Claim 24 has been canceled. Furthermore, this is remedied because the rewritten claims explicitly state the function for which a means clause performs. With regard to "the linear rate" lacking a prior antecedent, this is no longer relevant because the claims have been completely rewritten.

Claim Rejections - 35 USC § 102

O.A.: Claims 18-34, as best understood, are rejected under 35 U.S.C. § 102(b) as being anticipated by Matsumura (U.S. Patent No. 3,903,903).

Matsumura discloses a hair processing device which isolates small numbers of hairs between projections. The projections comprise tine assemblies 1,3, and form stationary channels therebetween. The tine assemblies comprise moving hair handlers or gates shaped to push hairs in a desired direction as set forth in column 2, lines 1-40.

RESPONSE: The problem seems to be that the intended scope of the claims 18-34 has not been understood. Therefore, claims 18-34 have been canceled and new claims have been rewritten so as to define the invention in a manner clearly distinct from Matsumura. The new claims do not depend on the language discussed in the paragraph directly above.

Claims 18-34, as best understood, are rejected under 35 U.S.C. § 102(b) as being anticipated by Walsh (U.S. Patent No. 1,678,891).

Walsh discloses a hair processing device which isolates small numbers of hairs between projections. The projections comprise tine assemblies and form stationary channels therebetween. The tine assemblies comprise moving hair handlers or gates 50 shaped to push hairs in a desired direction see figure 2.

RESPONSE: The problem seems to be that the intended scope of the claims 18-34 has not been understood. Therefore, claims 18-34 have been canceled and new claims have been rewritten so as to define the invention in a manner clearly distinct from Walsh. The new claims do not depend on the language discussed in the paragraph directly above.

Discussion the new Independent Claims

Claims 18-34 have been canceled, and new claims 35-66 have been introduced. The examiner has applied Matsumura and Walsh as prior against the previously entered claims 18-34. The independent claim most similar to those claims rejected under 35 USC §102 is claim 35. Furthermore, new independent claims 62, 64 and 66 are so foreign to Matsumura and Walsh that no comparison can be made. Furthermore, the references cited but not applied have been considered but do not show or render obvious the invention as defined in the new claims 35-66. The references applied by the examiner can only be meaningfully discussed in comparison to claim 35 and the claims that depend on it. The other claims are so foreign to the applied references that a meaningful discussion can not be made. Claim 35 (an independent claim) cites a combination of elements unanticipated by Matsumura,

U

Title: Automated Hair Isolation and Processing System

Walsh, Esposto (U.S. Patent No. 4,108,186) and all other references cited by the examiner.

Claim 35 (an independent claim) compared against Matsumura--the rejection is overcome

The preamble of claim 35 is directed towards a very different type of apparatus from Matsumura. The preamble of claim 35 references "an apparatus for moving through relative to surface-attached hair-like fibers and facilitating their controlled isolation." Unlike claim 35, Matsumura describes an apparatus for planting hair fibers in a bare planar surface and is not concerned with moving through surface-attached hair-like fibers, much less dispensing such pre-existing surface-attached fibers. The elements of Claim 35 define a device that is not only directed towards a device for moving through surface-attached hair-like fibers and their controlled isolation but also includes specific functional structures for supplying cued surface-attached hairs and repeatedly dispensing them into an isolation area. Matsumura does not anticipate a cued surface-attached hair supply or a repeating dispensing means acting on them. This presents a substantial functional difference in that the present invention allows for rapid processing of pre-existing surface-attached hairs, such as natural scalp hairs. Matsumura anticipates no such functionality.

Claim 35 (an independent claim) compared against Esposto and Walsh--the rejection is overcome

Esposto and Walsh present devices for holding surface-attached hairs in compartments. However, neither Esposto nor Walsh anticipates a cued hair supply means for supplying cued surface-attached hair-like fibers. Likewise, neither Esposto nor Walsh anticipates a repeating dispensing means acting on a cued hair supply. Esposto and Walsh describe devices that merely hold those surface-attached hairs that are presented to them and do not contain a dispensing means. To illustrate, if the question is asked, "A device is holding hairs in a compartment. What can be known about the origin of these hairs?" In the cases of Esposto and Walsh the answer is definitive. We can know that not only are these devices holding hairs from a bunch that was presented to them but also we know that hairs in the most interior (farthest distance for a hair to reach) regions of their compartments substantially originate from the most external regions of this bunch. This is not true with the present invention. The position of a hair within the device of the present invention tells us nothing about its originating position within a bunch. This is because the present invention is capable of continuously dispensing hairs from a cued hair supply; it does not just hold what is presented to it. As such, the answer to the question depends on how many processing cycles the device has made. Furthermore, the present invention's operation is not dependent on manual presentation of a bunch of hair.

The present invention can operate continuously without the need to be manually re-loaded with hair between each processing cycle. Walsh and Esposto cannot do this.

The Novel Physical Features of Claim 35 Produce New and Unexpected Results and Hence Are Unobvious and Patentable Over the Cited References Under § 103

The present invention's capability of repeatedly dispensing hairs from a cued hair supply means into an isolation area means not only represents a technical difference from the cited references (as discussed above) but also affords great advantages. The advantages are not just academic or trivial but provide great and unexpected new benefits. Matsumura is not suitable for use with pre-existing surface-attached hairs. Esposto and Walsh are primarily single-batch place-holding devices. In other words, they hold a single batch of hair manually presented to them so that it can be further manipulated. Furthermore, any subsequent batches of hair must be manually presented. One new batch or reload between each processing cycle is required. The present invention as defined in claim 35 has no such restriction. This makes the present invention a much superior platform for rapid operation. Without the need for manual reloading, the present system can function not only faster but act to isolate much smaller groups of hairs than would be practical for use with the cited references. For example, in contrast to the present invention, using a device such as Esposto to aid in the manual attachment of hair extensions to scalp hairs would not only be very time-consuming but would be expected to yield inferior results because the scalp hairs and hair extensions would be attached in bigger bunches. The manual reloading and repositioning procedure that would be necessary would add so much time that attaching hair extensions to a person's entire head would literally take days of work. The superior quality and processing time associated with the present invention are so strikingly different from the references cited that it is reasonable to expect that it could create a sub-industry within the haircare industry. For example, hair extension use among Afro-American females is not uncommon. However, it is not a mainstream salon process, as hair coloring is. Manual place-holding devices similar to Esposto and Walsh are generally not used for hair-extension attachment because doing so would take such a longtime, rather hair extensions are glued or tied in as long wefts each containing thousands of hairs. However, this approach, which drastically reduces quality (compared to attaching only a very few hairs a time), usually only covers the back third of the head (so as to make the hair appear longer) and often requires about 7 hours of manual work. Furthermore, the low quality of hair extension to scalp hair attachment usually causes the scalp to feel like an itchy rug has been tied to it. In contrast, the present invention could achieve much higher quality results in a matter of minutes. By attaching hair extensions individually to scalp hairs, results virtually indistinguishable in look and feel from natural hair alone could be

C

Title: Automated Hair Isolation and Processing System

achieved. Because of the rapidity and lack of user interaction required to use the present invention, these results could be achieved in a matter of minutes. The references cannot do this. With this lack of disadvantages, the present invention could allow a process like hair-extension attachment to take its place as a common salon service such as hair coloring. (The because it would be no more expensive or time consuming than hair coloring while yielding entirely unobjectionable results.) This is what is meant by creating a sub-industry and is one example of a striking and unexpected result achieved from the invention as defined by claim 35. (Also, application to other processes, such as coloring individual hairs at a uniquely rapid rate, makes practical haircare processes whose end results are strikingly different from their conventional counterparts.) Thus, the novel physical features of applicant's invention produce striking and unexpected benefits that render it patentable under § 103.

Claim 62 (an independent claim) unanticipated by references cited

Claim 62 describes an apparatus for moving through surface-attached hairs so as to attach hair extensions to said surface-attached hairs. It defines the preferred embodiment from the aspect of its capability to continuously dispense and attach hair extensions amongst and to surface-attached hairs. Like claim 35, it defines a device whose ideal form of operation does not require manual presentation of a bunch of surface-attached hairs between processing cycles. To illustrate, after a group of hair extensions have been attached to a group of surface-attached hairs, a second group of hair extensions and surface-attached hairs are free to enter the attachment area from their respective supply means. This can occur entirely as a result of the device being moved relative to the surface-attached hairs, such as by advancing it over the scalp surface, entirely without manual presentation of a group of surface-attached hairs. The apparatus also includes a hair attachment substance means for attaching hair extensions to surface-attached hair-like fibers and a hair attachment substance supply means for supplying said hair attachment substance into said hair attachment area. It is evident that all references cited are foreign to the invention as defined by claim 62.

Claim 64 (an independent claim) unanticipated by references cited

The hair processing and isolation technology taught by the present invention allows for far more rapid and precise hair manipulation than conventional hair processing devices. The preferred embodiment shows that most ideally a guidance mechanism forms an integral part of the system. The invention is defined from this perspective in Claim 64. Claim 64 describes an apparatus for the processing of hair-like fibers which are attached to a surface, such as the scalp, configured so that processing of any hair only occurs a substantially controlled number of times. It is comprised of a hair processing means, a hair surface row segregation means comprised of adjacent segregated rows of hair, and a track guide means for guiding the hair processing means so as to provide alignment with one of the segregated rows of surface-attached hair-like fibers. The hair processing means' alignment with this

6

Title: Automated Hair Isolation and Processing System

single row permits processing only of hairs from this row. This same alignment is also possible for an adjacent row. This allows the number of times each hair is processed to be controlled, specifically each hair in a segregation row could be processed only once per swipe of the hair processing means. Accidental double processing of marginal hairs in an adjacent segregation row could be substantially prevented. The invention defined by claim 64 is implemented in the preferred embodiment in the form of the track-guide cap being used to guide the hand-held hair processing system over the surface of the scalp. For example, the track-guide cap working integrally with the hand-held unit that attaches hairs extensions to isolated scalp hairs together form a means of segregating processed scalp hairs (with hair extensions attached) from unprocessed scalp hairs (without hair extensions attached) so as to allow hair extensions to be attached to any given scalp hair only once. It is evident that all references cited are foreign to the invention as defined by claim 64.

Claim 66 (an independent claim) unanticipated by references cited

Claim 66 (the fourth of four independent claims) describes an apparatus for attaching non-surface-attached hair-like fibers to a surface amongst surface-attached hair-like fibers already attached to said surface. It includes a hair channel pathway means for guiding said surface-attached hair-like fibers into an area of high concentration coinciding with said hair channel pathway means so as to leave an area of decreased surface-attached hair-like fibers concentration lateral to said hair channel pathway means. In this area of decreased concentration, an attachment area means is provided. This attachment area means is for attaching non-surface-attached hairs to the surface. The scalp is an example of such a surface. The attachment area means is supplied with non-surface-attached hair-like fibers by a supply means. Finally, an attachment means is provided within the attachment area for attaching non-surface-attached hair-like fibers to the surface. This attachment may either be directly to the surface or indirectly to the surface by way of attachment to the pre-existing surface-attached fibers. It is evident that all references made of record are foreign to the invention as defined by claim 66.

The Dependent Claims are A Fortiori Patentable Over the References Cited

Claim 36 includes the subject matter claim 35 and further adds a dispensing actuation means for actuating the repeating dispensing means. This dispensing actuation means is controlled by a hair-flow sequencing control means for controlling the dispensing actuation means so as to dispense hair into the hair isolation areas means at a moment in the processing sequence when said hair isolation area is ready to accept more hair. Naturally, the hair-flow sequencing control means may be selected from a variety of actuation control devices known in the prior art for controlling actuation sequences, including electronic programmable controllers and

Title: Automated Hair Isolation and Processing System

entirely mechanical actuation sequence control systems. The invention as defined by Claim 36 is not anticipated by any of the references cited.

Claim 37 includes the subject claim 35 and further adds a hair processing means for processing surface-attached hair-like fibers so as to change their cosmetic appearance. This processing means acts on hairs in the isolation area means. This processing is actuated by a hair processing actuation means. A hair processing sequencing control means is used for controlling the actuation of hair processing actuation means in order to cause actuation of hair processing means so that processing occurs at a moment when said surface-attached hair-like fibers are positioned appropriately relative to said hair processing means so as to be ready for processing. Naturally, the hair processing sequencing control means may be selected from a variety of actuation control devices known in the prior art for controlling actuation sequences, including electronic programmable controllers and entirely mechanical actuation sequence control systems. The invention as defined by Claim 37 is not anticipated by any of the references cited.

Claims 38-42 include the subject matter of claim 35 and further add a straightening maintenance means for providing and maintaining said surface-attached hairs in a substantially perpendicular orientation relative to their direction of movement through the repeating dispensing means. In the specification, the most extensively described embodiment of a straightening maintenance means is the hair-tensioning straightener. The further inclusion of a hair-tensioning straightener is more specifically defined by claim 39. However, applying tension to surface-attached hairs is not the only way to provide and maintain surface-attached hairs in a substantially perpendicular. Controlling the movement of the hair isolation system relative to the surface-attached hairs that have yet to be isolated prevent these unprocessed hairs from being overrun and flattened against the surface to which they are attached, such as the scalp. To help control the speed of isolation system advancement (over a surface such as the scalp) isolation system can be made contingent sensor-derived data indicative of system advancement relative yet to be isolated hairs. The further inclusion of a movement control system based on sensor-derived data is defined in claim 40. The type of sensor-derived data on which to condition speed of isolation device movement can include tension measured in surface-attached hair fibers and measured speed of isolation device advancement. The further inclusion of a mechanism for conditioning device movement on sensor-measured surface-attached-hair tension is defined by claim 41. The further inclusion of a mechanism for controlling isolation device movement based on sensor-measured speed of advancement (relative to the surface to which the hairs are attached) of said hair isolation device is defined by claim 42. It is evident that the subject matter defined by claims 38-42 is not anticipated by the references cited.

6

Claim 43 includes the subject matter of claim 35 and more precisely defines wherein the repeating dispensing means is a hair transport means for engaging a limited number of hairs in the cued hair supply means and transporting them into the hair isolation area means. Claim 44 further defines the subject matter of claim 43 to include a processing means for processing surface-attached hairs in isolation in a manner so as to change their cosmetic appearance. It also specifies that at least some of the cosmetic changed effected by the processing means is brought about by a force whose source is independent of any force applied by the movement of the hair transport means (introduced in claim 43). This restriction defines a structure in which some mechanism other said hair transport means contributes to the cosmetic changes. Claim 45 further defines the subject matter of claim 43 to include a second hair transport means for engaging the hairs brought to it by the first hair transport means introduced in claim 43. Once the hairs are so engaged, they are further transported. It is evident that the subject matter defined by claim 43 is not anticipated by the references cited.

Claims 46 and 47 include the subject matter of claim 35 and further define wherein the repeating dispensing means is a hair pathway obstruction means for intermittently obstructing the path of hair flow from said cued hair supply means to said hair isolation area means. Claim 47 further includes a hair metering area positioned along the hair-flow pathway at point earlier encountered than the hair pathway obstruction means. (Note: The hair pathway obstruction means is a variant of the repeating dispensing means.) Claim 47 also includes a hair pushback gate means for intermittently obstructing the path of hair flow from the cued hair supply means into said metering area so as to isolate a limited number of hairs in said metering area between said pushback gate means and the hair pathway obstruction means (a variant of the repeating dispensing means). This way, only those hairs in said metering area (between the pushback gates means and the hair pathway obstruction means) are allowed to pass said hair pathway obstruction means upon its intermittent allowance of hair flow. Thus, only these hairs will be able to enter the hair isolation area means. It is evident that the subject matter defined by claims 46 and 47 is not anticipated by the references cited.

Claims 48-51 include the subject matter of claim 35 and further comprise a hair-extension supply means for supplying hair extensions in the hair isolation area means, a hair attachment substance means for attaching said hair extensions to said surface-attached hair-like fibers, and a hair attachment substance supply means for supplying the hair attachment substance means into the hair isolation area means so as to attach hair extensions and surface-attached hairs together. It is evident that the subject matter defined by claims 38-51 is not anticipated by the references cited.

6

Claim 52 include the subject matter of claim 35 and further adds a longitudinal hair movement means for moving surface-attached hair-like fibers in a longitudinal direction along their shafts through the hair isolation area means, a coating substance, and a coating substance supply means for supplying coating substance into the interior of said hair isolation area means so as to coat the surface attached hair-like fibers as they are conveyed longitudinally through the hair isolation area. In other words, isolated surface-attached hairs are conveyed lengthwise through the hair isolation area means and coated. It is evident that the subject matter defined by claim 52 is not anticipated by the references cited.

Claim 53 includes the subject matter claim 35 and further adds a longitudinal hair movement means for moving surface-attached hair-like fibers in a longitudinal directional along their shafts through the hair isolation area means, and a cross-sectional reshaping area means for reshaping the cross-sectional shape of the surface-attached hair-like fibers as they are conveyed longitudinally through the cross-sectional reshaping means by the longitudinal hair movement means. The cross-sectional reshaping means substantially overlaps the hair isolation area means. In other words, the isolated hairs conveyed lengthwise through the hair isolation area means and their cross-sections are reshaped by the cross-sectional reshaping means as they move through it. It is evident that the subject matter defined by claims 53 is not anticipated by the references cited.

Claim 54 includes the subject matter of claim 35 an adds a hair surface row segregation means comprised of adjacent segregated rows of hair, and a track guide means for guiding the repeating dispensing means so as to provide alignment with one of the segregated rows of surface-attached hair-like fibers. The repeating dispensing means' alignment with this single row permits isolation only of hairs from this row. This same alignment is also possible for an adjacent row. This allows the number of times each hair is isolated to be controlled, specifically each hair in a segregation row could be isolated only once per swipe of the repeating dispensing means. Accidental double isolation of marginal hairs in an adjacent segregation row could be substantially prevented. The invention defined by claim 54 is implemented in the preferred embodiment in the form of the track-guide cap being used to guide the hand-held hair processing system over the surface of the scalp. It is evident that all references made of record are foreign to the invention as defined by claim 54.

Claim 55 includes the subject matter of claim 54 and additionally includes a position ascertaining means for ascertaining longitudinal position of the apparatus of claim 35 along said track guide means, a row determinant means for ascertaining within which of the segregated rows said apparatus is positioned, a longitudinal conveyance means for conveying a longitudinal segment of a group of surface-attached hairs lengthwise through said apparatus, a hair length measurement means

Title: Automated Hair Isolation and Processing System

for determining the longitudinal length of said longitudinal segment of the group of surface-attached hairs that have been conveyed through said apparatus by said longitudinal conveyance means, a cutting means for cutting hair in said hair isolation area means, and a cutting control means. The cutting control means uses data from the position ascertaining means and said row determinat means and said hair length measurement means corresponding to a longitudinal position along a specific row so as to reference recorded hair length data corresponding to said position. This hair length data is used to trigger the cutting means causing it to cut the group of hairs (that have been conveyed longitudinally through the isolation area means) at a moment when the group's linear length measured from said cutting means to the surface they are attached (a surface such as the scalp) at a moment when the hair length equals the recorded hair length (for that position along the track guide). This allows the system to precisely provide haircuts based on prerecorded data. It is evident that the subject matter defined by claim 55 is not anticipated by the references cited.

Claims 56-59 includes the subject matter of claim 35 and additionally includes a bend-under means for conveying force that conveys the hair-like fibers through said apparatus at a rate faster than said apparatus moves relative surface of hair attachment causing said hair-like fibers to be conveyed longitudinally along their shafts through and under said apparatus. This additional mechanism works to help prevent dispensed hairs from building up in the isolation area by pulling them under the apparatus. Although such an operation could be done manually, this dedicated mechanism helps the dispensing mechanism realize its full potential for high-speed operation. It is evident that the subject matter defined by claims 56-59 is not anticipated by the references cited.

Claim 60 includes the subject matter claim 35 and further adds an attachment substance degrading means for degrading an attachment substance that is holding hair extensions together with surface-attached hair-like fibers, an attachment degrading application means for applying said attachment substance application degrading means to hairs isolated in said hair isolation area means, and a detached hair extension separation conveyance means for conveying hair extensions detached by said attachment substance degrading means away from the surface-attached hairs that they used to be attached to. This additional mechanism allows the apparatus of claim 35 to remove hair extensions from scalp hairs in a controlled manner. It is evident that the subject matter defined by claim 60 is not anticipated by the references cited.

Claim 61 includes the subject matter of claim 35 and adds a hair-flow reversing means for causing surface-attached hairs that have entered said hair isolation area means to exit it substantially from the direction that they entered, an exiting hair separation means for intermittently separating the hairs that been reversed

Title: Automated Hair Isolation and Processing System

in direction by the hair-flow reversing means from the hairs in the cued hair supply means. The exiting hair separation means is positioned between the hair isolation area means and the cued hair supply means. Also, included is a reversed hair exit pathway means for allowing the hairs that have been reversed out of said hair isolation area means by said hair-flow reversing means to exit said apparatus. Its origin is positioned lateral to said repeating dispensing means so as to direct the exiting hairs away from reentering the path of the repeating dispensing means. This addition of this mechanism serves a similar role to the bend-under mechanism defined in claims 56-59. That is it works to help prevent dispensed hairs from building up in the isolation area. This additional mechanism helps the dispensing mechanism realize its full potential for high-speed operation. It is evident that the subject matter defined by claim 61 is not anticipated by the references cited.

Claim 63 includes the subject matter of claim 62 and adds an attachment substance supply sequencing control means for controlling said hair attachment substance supply means so as to trigger release of said attachment substance means into said hair attachment area at a moment in the processing sequence when the hairs to be attached are in said hair attachment area. It is evident that the subject matter defined by claim 63 is not anticipated by the references cited.

Claim 65 includes the subject matter of claim 64 and adds an attachment area, a hair-extension supply means, a surface-attached hair-like fiber supply means, a hair attachment substance means, and a hair attachment substance supply means. All of these elements are part of a hair processing means for moving through relative to surface-attached hair-like fibers so as to attach hair extensions to them. It is evident that the subject matter defined by claim 65 is not anticipated by the references cited.

Title: Automated Hair Isolation and Processing System

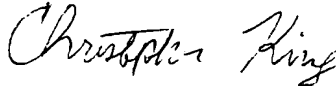
Conclusion

For all of the above reasons, applicant submits that the claims are now in proper form and that the claims all define patentably over the prior art. Therefore, applicant submits that this application is now in condition for allowance.

Conditional Request for Constructive Assistance

Applicant submits that patentable subject matter is clearly present. If the examiner agrees but does not feel that the present claims are technically adequate, applicant respectfully requests that the examiner write acceptable claims pursuant to MPEP 707.07(j).

Very Respectfully,

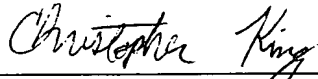


Christopher R. King, Applicant

7508 Wood Court
Fishers, IN 46038

Certificate of Mailing: I certify that on the date below this document and referenced attachments, if any, will be deposited with the U.S. Postal Service as first class mail in an envelope addressed to: "BOX NON-FEE AMENDMENTS, ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231

18 Apr 2002



Christopher King, Applicant